

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

## PCT

WRITTEN OPINION  
(PCT Rule 66)

To:

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Date of mailing  
(day/month/year)

27.09.2004

Applicant's or agent's file reference  
E-1950-03

**REPLY DUE**

**within 3 month(s)**  
from the above date of mailing

International application No.  
PCT/EP 03/51022

International filing date (day/month/year)  
16.12.2003

Priority date (day/month/year)  
16.12.2002

International Patent Classification (IPC) or both national classification and IPC  
B60K6/04

Applicant  
UNIVERSITA' DI PISA et al.

1. This written opinion is the **first** drawn up by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
  - I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application
3. The applicant is hereby **invited to reply** to this opinion.
 

**When?** See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

**How?** By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

**Also:** For an additional opportunity to submit amendments, see Rule 66.4.  
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.  
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 16.04.2005

Name and mailing address of the international preliminary examining authority:



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**WRITTEN OPINION**

International application No. PCT/EP 03/51022

**I. Basis of the opinion**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*):

**Description, Pages**

1-12 as originally filed

**Claims, Numbers**

1-15 as originally filed

**Drawings, Sheets**

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

5. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

6. Additional observations, if necessary:

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	1,2,4,6,9,14
Inventive step (IS)	Claims	1-7,9-15
Industrial applicability (IA)	Claims	

**2. Citations and explanations****see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

- 1 Reference is made to the following documents:  
D1: EP0908343 A  
D2: EP0445873 A  
D3: US5841201 A
  - 2 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1,4-7,9 und 12-15 is not new in the sense of Article 33(2) PCT.
    - 2.1 With respect to claim 1, D1 discloses (the references in parentheses applying to this document): a hybrid drive assembly (Fig.1) for a vehicle having at least one drive wheel (implicit), the drive assembly comprising an internal combustion engine (1); and a transmission unit (18) interposed between a drive shaft (1a) of the internal combustion engine (1) and a propeller shaft (15) connected angularly to the drive wheel (implicit), and in turn comprising a clutch (6) having a drive member connected to the drive shaft (1a) and a driven member connected to the propeller shaft (Fig.1, implicit); said drive assembly also comprising an electric machine (2) which can be operated instead of or in combination with said internal combustion engine (Abstract), whereby said electric machine (2) comprises a rotor (2a) connected angularly and permanently to said driven member of said clutch (Fig.1).
    - 2.2 The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claim 14, which therefore is also considered not new.
- Thus, claims 1 and 14 are not new.
- 2.3 Referring to claim 2, D1 discloses that the transmission unit comprises a CVT (11) having a drive pulley (7) connected angularly to the drive shaft (1b) of the internal combustion engine (1) and a driven pulley connectable to the hub of the clutch (Fig.1, implicit).
  - 2.4 Regarding claim 4, D1 discloses that the rotor (2a) of said electric machine (2) is coaxial and integral with said bell of said clutch (6).

- 2.5 With regard to claim 6, D1 discloses a coupling interposed between said drive shaft and said drive member ([0039]).
- 2.6 Referring to claim 9, D1 discloses an electric generator (2) driven by said internal combustion engine (1).
- 3 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 3,5,7,10-13,15 does not involve an inventive step in the sense of Article 33(3) PCT.
- 3.1 D1 is regarded as being the closest prior art to the subject-matter of claim 3, and discloses a drive assembly (Fig.1), from which the subject-matter of claim 3 differs in that a centrifugal clutch is provided, said driven member of said clutch being a bell integral with said propeller shaft.

The problem to be solved by the present invention may therefore be regarded as connecting the driving side of the vehicle (motors) and the propeller shaft.

The solution proposed in claim 3 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons.

These features have already been employed for the same purpose in a similar hybrid propulsion system, see D2, col.2, lines 48-51, Fig.1. It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply these features with corresponding effect to a transmission according to D1, thereby arriving at a connection according to claim 3.

- 3.2 Referring to claims 5,7,12 und 13 the features of these claims are merely several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without any exercise of inventive skill.
- 3.3 With respect to claim 10, D1 discloses a drive assembly from which the subject-matter of claim 10 differs in that there are provided operating modes comprising at least a combustion mode wherein only the internal combustion engine is activated, an electric mode wherein said electric machine operates as a motor and said internal combustion engine is disabled, a parallel hybrid mode wherein said internal combustion engine and said electric machine are both activated and

connected to said drive wheel, and a series hybrid mode wherein said internal combustion engine is disconnected from said drive wheel and drives said electric generator.

The problem to be solved by the present invention may therefore be regarded as reducing the fuel consumption and the exhaust gas emission.

These features have already been employed for the same purpose in a similar hybrid propulsion system, see D3, col.1, lines 27-43. It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply these features with corresponding effect to a transmission according to D1, thereby arriving at a connection according to claim 10.

- 3.4 The subject-matter of claim 11 is also considered not to be inventive, whereby the features of this claim are disclosed in D3 (Abstract).
- 3.5 Dependent claim 15 does not contain any features which, in combination with the features of any claim to which it refers, meet the requirements of the PCT in respect of novelty and/or inventive step.
- 3.6 The combination of the features of dependent claim 8 is neither known from, nor rendered obvious by, the available prior art.